User’s Manual for Smart Constant Speed Dome Camera

Please read the manual carefully before installing and using the unit.

Model: JE900BN, JE900BNC

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Part I: Introduction

1-1 Instructions:

We greatly appreciate your choosing our product!
The product is under one year warranty, including free maintenance or spare parts replacement. Do not dismantle and repair the unit without the company's authorization.

Damage or breakdown arising from the following circumstances is No free maintenance:

1. dismantling and repairing of the unit without the company's authorization;
2. the transportation, loading or unloading of the unit which is arranged by the customer;
3. using and maintenance of the unit without observing the instructions in the User's Manual, including damage or breakdown arising from crashing, crushing, and unit affected with damp, liquids, corrosive or other man-made causes;
4. inapplicable ambient temperature or overloaded operation; surface abrasion or damage emerging when the unit is being used;
5. natural disasters and other accidents.

Attention: *To realize all the functions of the unit, a compatibility test must be carried out before applying other manufacturer's spare parts in the system.*

1-2 Characteristics

1. Precise conductive slip-ring is adopted, which 360°pan endless running and all-direction monitoring is realized, and cable-twisting problem with common constant speed domes are effectively solved.
2. The operation is based on advanced stepper motors and driving circuits, which ensures smooth running, long time consecutive working, long lifespan and high reliability.
3. PCB board is very concise, most of the parts on the PCB board are highly integrated and modulated, thus the malfunction is greatly reduced and the stability of the performance is ensured.
4. The design of the outer housing is reasonable, elegant and practical. It can endure long-term operation without distortion. And the installation is fast and convenient.
5. The function of Position Limiting is realized with photoelectrical sensors, which avoids traditional disadvantage of mechanical and switch Position Limiting (the switch lifespan is 200,000 times ON/OFF).
6. Left/right limiting positions can be set up by the key of the camera panel, it also can be set up through our company's keyboard, which avoids the limitations that it can only be set up from the front terminals.
7. There are 4 levels of running speed optional for the unit: 6°, 9°, 12°,15°/S, which can be adjusted according to actual conditions.
8. The built-in PCB panel supports multi mainstream protocols, which can be input according to the customer's needs. The Baud rate is also adjustable.
9. The unit adopts DC14V(15V) power supply and separates from it the components that produce heat in the process of transformation, which prolongs the durability of the unit. The unit is anti-jamming and anti-crashing.
10. Two grades anti-lightening technology, which effectively improve the anti-lightening and

anti-interruption ability

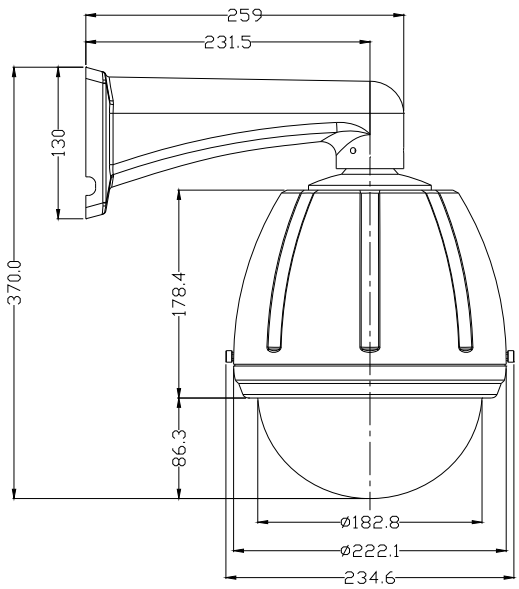
11. If the power is off when the unit is scanning or cruising, it will automatically resume scanning or cruising once power supply is on.
12. Support 16 preset positions, 1 tour, left & right scan, 360° scan.
13. The unit has one guard position; the user can preset it for a key monitor area according to the actual conditions. If not operated after 5 minutes, it will automatically monitor the preset position.

1-3 Main Technical Data

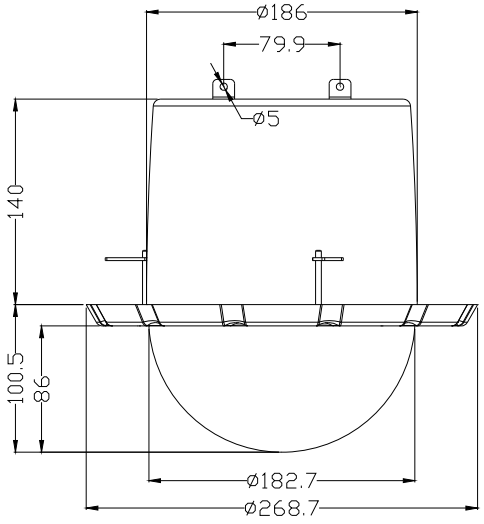
Electric	Power supply	DC14V---15V 2A
	Dome motor	DC14V---15V/0.5A
	Camera lens motor	DC12V/100mA
	Camera power supply	12V/1A
	Heater & fan working range	Fan(≥50°C); heater (≤5°C)
	Addresses range	1～63
	Communication system	RS485 bus controlling
	Communication protocol	Pelco-D, Pelco-P, Pelco-D1
	Baud rate	1200bps, 2400bps, 4800bps, 9600bps
	Controlling device	video matrix, DVR controlling keyboard
	Preset position quantity	16 preset positions
	Auto Scan	Scan between two points and 360° endless scan
	Tour group quantity	1 group(16 preset positions can be included)
	Default position function	Yes
Mechanical	Dome movement	pan 360° endless, tilt 0°-90°
	Dome speed	6º/S, 9º/S, 15º/S, 20º/S adjustable
	Movement limiting position	pan adjustable within the dome movement scope
Ambient	Ambient temperature	0ºC～49ºC (without temperature controlling devices) -40ºC～60ºC (with temperature controlling devices)
	Relative Humidity	≤95%RH
Camera	Image Sensor	1/4 ″Super Had CCD
	Resolution	480TV Line
	Lens	f=3.25-88mm High Durability 27X Zoom Lens
	Angle of View	48 degrees (w) Horizontal 3 degrees (t)
	Sync System	Internal/Line Lock NTSC 60 Hz , PAL 50HzC
	Minimum illumination	0.5Lux/0.1Lux with B/W mode
	IR Sensitive	0Lux with IR on
	Video Focus	Auto/Manual (Near-Far)
	White Balance	Auto/OFF
	BLC	Auto/OFF
	Electric shutter	1/50¯1/12000s
	S/N Ratio	>50dB
	Video Output	Composite 1.0+/-0.2Vp-p

Part II: Installation Procedures

2-1 Outer shape and installation size

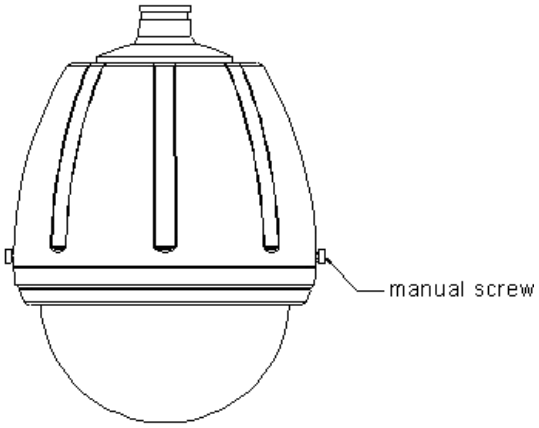


1, JE900BN

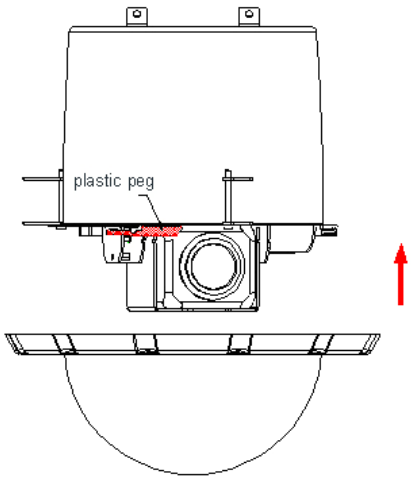


2, JE900BNC

2-2 Installation of Dome Cover



1, JE900BN

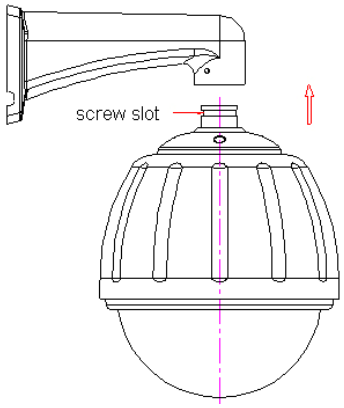


2, JE900BNC

For model JE900BN, Put the dome cover to the housing well in right position, then tighten the two screws manually or with a screwdriver. (See the above figure at left)

For Model JE900BNC embedded dome, Fit the three plastic pegs on the dome cover to the corresponding ones on the housing, then turn it to the right for about 20 degrees till it stops moving. (See the above figure at right)

2-3 Housing and Wall-mount Bracket installation



Push the power, video and controlling integrated cable through the bracket hole, then direct the top of the housing to the bracket hole and tighten them. Use a screwdriver to drive the three M6 screws on the bracket into the screw slot. (See the above figure)

2-4 Installation of the Bracket

2-5 Wall-mount installation

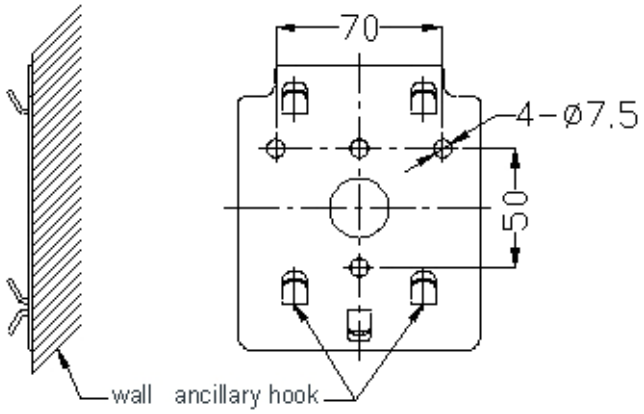


Figure 1: Dimension of the installing bottom board of the Wall Bracket for Outdoor Dome Camera

Select the where you want to installing and make sure the place can be sustained its weight. Pencil the relative positions of the four φ7.5 bores of the wall bracket on the wall, and fix the bracket on the wall with particular screws (prepared by the user). (See the above figure)

2-6 Ceiling installation

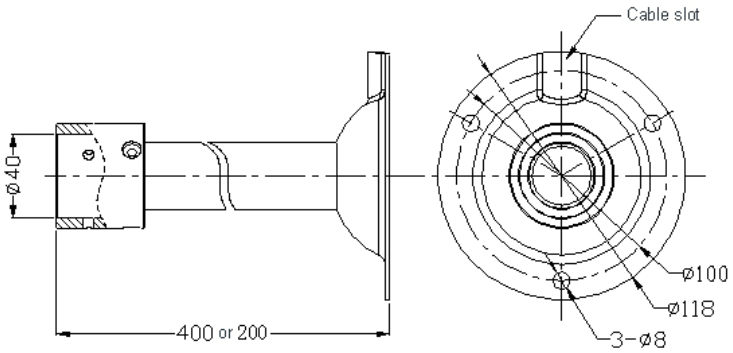


Figure 2: Dimension of Pole Bracket

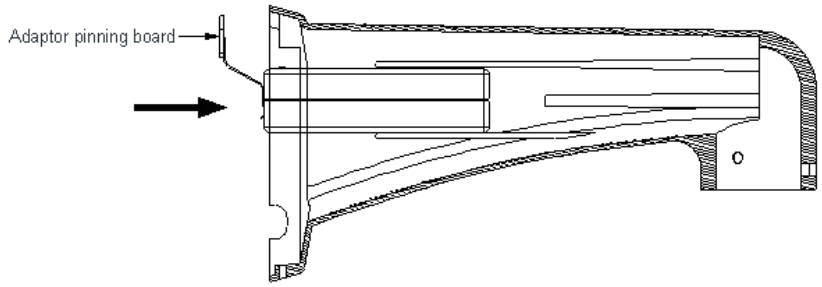
Select the where you want to installing and make sure the place can be sustained its weight. Pencil the relative positions of the three bores of the bracket on the ceiling, and fix the bracket to the ceiling with special screws (prepared by the user). Do not forget to push the connecting power, video and controlling cables through the cable outlet into the bracket tube in advance.

Special Instruction: *Pole bracket is used for indoor installation. In some special condition if it is needed to be used outdoors, in order to prevent the rain water from seeping into the unit and affecting the normal running, please pay attention to the following points in the installation project:*

1. The diameter of the flange on the outdoor vertical pole should be at least 20cm more than that of the installing flange of the Pole bracket.
2. The cable should not go through the cable-slot on the flange edge of the Pole bracket, it should go through the central hole of the bracket.
3. The 3 bolts fixing position should be sealed with sealant to prevent the rain water from seeping in.

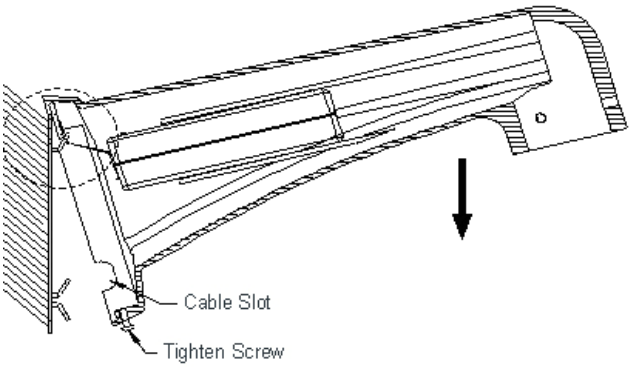
2-5 Power supply adapter installation

To make sure the power source is at DC15V 2A for the PTZ camera, you'd better to install the AC/DC power adapter inside the arm bracket or next to the PTZ camera to avoid the drop of voltage, due to there is a big internal resistor in the DC circuit.



- ***Step 1***

Put the power adaptor into the well connected wall bracket and pin the power adaptor with the power pinning board lest the power adaptor slides out. (See the above figure)

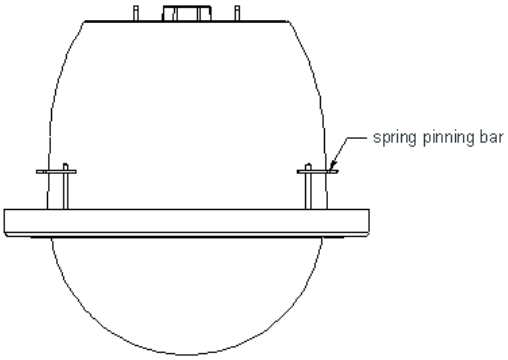


- ***Step 2***

Pull the power, video and controlling integrated cable out of the bracket tube via the cable out-going slot, then fit the dotted-line part of the bracket shown in the figure to the two corresponding pegs on the installed peg-board, then push the bracket downward until it locks in place. Make sure the bracket fits well with the bracket installing bottom board, then tighten the Tightening Screw on the bracket. (See the above figure)

2-6 Installation for Embedded dome Camera

Locations with suspended top suit the dome camera with in-ceiling installation style, which appears to be a hemisphere, having elegant-look and good concealment. The in-ceiling style installation applies to solid locations of the ceiling. First, select the desired location, pencil the outline of the upper housing on the ceiling and make a corresponding-size bore(about 210mm diameters for Seven-inch Dome Camera, about 240mm diameters for Nine-inch one), then insert the upper housing into the ceiling, and press the spring pinning boards against the edge of the ceiling opening. After that, tighten the screw adjusting the spring pinning boards, and lock the upper housing in the ceiling tightly. For the sake of better safety, please use a metal wire rope to connect the top of the upper housing to a reinforced structure of the ceiling. (The wire rope is required to bear at least 5 times the weight of the dome camera.)



2-7 Complete electrical wired sketch

Note:

1, RS485 white cable is for RS485-, RS485 Green Cable is for RS485+

2-8 Running state test

When you installed the dome camera and make sure the connecting is correct, you can power it on with the power supply DC14V (15V) for camera running state test.

Once the power it on, check whether the power indicator led on the PCB board is on. Now the dome camera should be running **self-check** – panning, tilting and zooming. After the self-check, the position of the dome is horizontally on the left limiting position, tilt 30º. This means the PTZ camera is in good condition.

Two abnormal states may follow the self-check:

a. *The dome camera makes no action*
b. *The dome camera is in the state of pan auto-scanning*

If the dome camera is in the state of pan auto-scanning, the scanning should be stopped through the controlling device to avoid possible friction or collision between camera cable and inner housing caused by inappropriate installation of the camera.

After installing the dome cover, control the dome camera to make slow pan/tilt movement, and observe its agility and stability, and check whether there is friction or collision between camera, cable and inner housing.

If the camera movement is unstable and with noise, please check whether the connection between the speed dome and the bracket is vertical, or whether the camera is in good connection with the peg-board. If not, switch off the power supply, then check and re-install the unit following the above-mentioned installation instructions.

If there is friction or collision between the camera, cable and the inner housing, switch off the power and open the vitreous cover to adjust the position of the camera on the suspender, or tidy up the cables inside the inner housing. Then reinstall the vitreous cover.

Switch on the power again, control the dome camera to make slow pan/tilt movement, observe its agility and stability, and check whether there is friction or collision between camera, cable and inner housing.

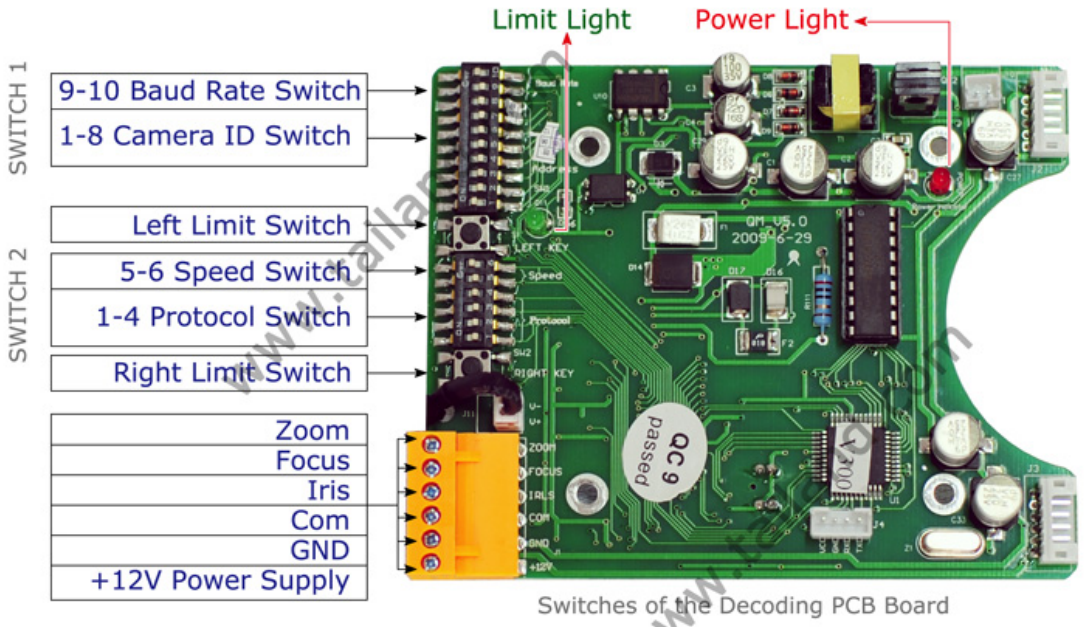
As per the method introduced above, adjust the unit well.

Part III: Setup and Operate

3-1 Protocol, Baud Rate, Address and Speed setup

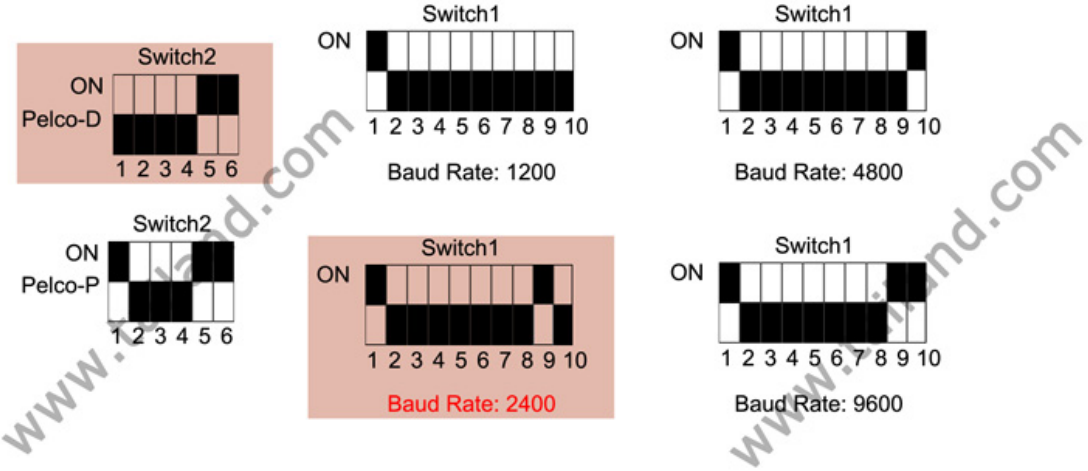
It is important to setup the protocol, baud rate and camera address for controlling, Both of the dome camera and controller must be setting same in the protocol, baud rate and camera address

Protocol, Baud Rate and Camera ID Setup



Switches of the Decoding PCB Board

Default setting: Plotocol: Pelco-D, Baud Rate 2400, Camera ID: 1



1. Address Setup

As shown in the figure below, DIP-1 to DIP-8 of the 10-button coding switches is used to set up address of the dome camera from 1 to 63. Control can be realized only when address code of the dome camera is identical to that of the hard disk video recorder or matrix or controlling keyboard. The coding switches from DIP-1 to DIP-8 are equivalent to a 8-bit binary figure. The state “ON” of each bit means “1” while”OFF”means”0”. Table 2 shows states of coding switches

The table of Camera ID:

No.	12345678	No.	12345678	No.	12345678	No.	12345678
1	10000000	17	10001000	33	10000100	49	10001100
2	01000000	18	01001000	34	01000100	50	01001100
3	11000000	19	11001000	35	11000100	51	11001100
4	00100000	20	00101000	36	00100100	52	00101100
5	10100000	21	10101000	37	10100100	53	10101100
6	01100000	22	01101000	38	01100100	54	01101100
7	11100000	23	11101000	39	11100100	55	11101100
8	00010000	24	00011000	40	00010100	56	00011100
9	10010000	25	10011000	41	10010100	57	10011100
10	01010000	26	01011000	42	01010100	58	01011100
11	11010000	27	11011000	43	11010100	59	11011100
12	00110000	28	00111000	44	00110100	60	00111100
13	10110000	29	10111000	45	10110100	61	10111100
14	01110000	30	01111000	46	01110100	62	01111100
15	11110000	31	11111000	47	11110100	63	11111100
16	00001000	32	00000100	48	00001100	64	00000010

Table 3：Camera Address and Coding Switches

The camera ID can be 255, please ask us for more details about the ID setting if you need

2. Communication Baud Rate Setup

As shown in the above figure, DIP-9 and DIP-10 of the 8-button coding switches are used to set up Baud rate of communication and 4 different Baud rate can be selected (1200BPS/2400BPS/4800BPS/ 9600BPS). Following table shows states of coding switches of baud rate. The state “ON” of each bit means “1”, while “OFF” means “0”.

No.	1200 bps	2400 bps	4800 bps	9600 bps
No. 9	OFF	ON	OFF	ON
No. 10	OFF	OFF	ON	ON

3. Protocol Setup

As indicated in the above figure, DIP-1 to DIP-4 of the 6-button coding switches are used to set up protocol of the dome camera. The built-in Decoding PCB Board provides protocols as listed in Table 6. Other protocols can also be written-in as the user requires.

No.	DIP- 4,3,2,1	Types of Protocols
1	0 0 0 0	PELCO_D
2	0 0 0 1	PELCO_P
3	1 1 1 0	JCO
4	1 1 1 1	PELCO_D1

4. Set up the Movement Speed

The movement speed of the dome can be set up through the coding switch.

DIP 5 and DIP6 of the 6-button coding switch (see figure above) are used to set up the movement speed of the dome. Please refer details as Table 6.

No.	DIP: 5 6	Pan speed
1	00	6°
2	10	9°
3	01	15°
4	11	20°

3-3 The particular command and its Definition

The below table is the particular short command for operate the PTZ camera with protocol “Pelco-D” and “Pelco-P”

These short commands are useful for operation the PTZ function. Please remember

Code No.	Definition	Code No.	Definition
160	begin with left/right limiting position setup	**140**	Begin with the tour group setup
161	Finish left/right limiting position setup	**141**	Finish the tour group setup
130	Set up left limiting position	**142**	Start Tour Group
131	Set up right limiting position	**162**	Activate Home Position function
132	Start left/right scanning	**163**	Disable Home Position function
135	Start 360°scanning of the pan/tilt	**164**	Set up Home Position
138	Stop auto scanning of the pan/tilt		

The below table is the particular short command for operate the PTZ camera with protocol “Pelco-D1”

Code No	Definition	Code No	Definition
120	begin with left/right limiting position setup	**110**	Begin with the tour setup
121	Finish left/right limiting position setup	**111**	Finish the tour setup
100	Set up left limiting position	**112**	Start Tour
101	Set up right limiting position	**122**	Activate Home Position function
102	Start left/right scanning	**123**	Disable Home Position function
105	Start 360°scanning of the pan/tilt	**124**	Set up Home Position
108	Stop auto scanning of the pan/tilt		

For all kinds of operations introduced in the following paragraphs, if PELCO-D1 protocol is chosen for the control, please choose the Function Codes inside the bracket to operate.

3-4 Set up and Preview Preset Positions

The function of preset positions works in this way: the dome camera saves the current pan/tilt parameters in number order (1-16), quickly previews those parameters when needed, and adjust the dome to the corresponding positions. Users can use such devices as controlling keyboard to save and preview preset positions fast and conveniently. The dome camera can support 16 preset positions.

A. Set up preset positions

After controlling (pan/tilt) the dome camera to the position you want to monitor keyboard, enter the number for representing the preset position and press the “PRESET” key, then you have set up the preset position successfully.

Example: Set up preset position No.1

a. Use the joystick to move the dome camera to the desired position.
b. Enter “1”

c. Press the “PRESET” key

setup preset position
Move the camera toward the where you want to monitor by joystick, and then enter the number and preset key.
Max 16 preset positions can be available

B. Preview Preset Positions

The function enables the dome camera to quickly return to the preset position you set.

Enter the number you need to preview, Press the “PREVIEW” key, then the dome camera returns to the preset position.

Example: Preview Preset position No.1

a. Enter “1”

b. Press the “PREVIEW” key

1-5 Setup and running of Tour group

Automatic tour function is a latest function of the constant-speed dome camera. The user can program the preset positions into the automatic tour in the required order, when necessary, run the tour, the constant-speed

dome camera will automatically scan the preset positions set in the tour consecutively and circularly. Up to 16 preset positions can be saved in one tour group.

A. Setup of Tours

a. In the keyboard initial state, enter number “140”(110) and press the “PREVIEW” key to enter the tour setup.

b. After entering the setup, add preset position number to the tour. Enter the preset position number and press the “PREVIEW” key, the first preset position is successfully added. Then goes the second one. Enter the second preset position number and press the “PREVIEW” key, the second preset position is successfully added. Up to 16 preset positions can be added in the same way.

c. After all the required preset positions having been added in the tour, enter the number “141”(111) and press the “PREVIEW” key to exit the tour setup.

B. Start Running a Tour

In the keyboard initial state, enter number “142” (112) and press the “PREVIEW” key to start running the preset tour.

Example: Set up the tour order to be **1→2→5→3→4→6** (please set up preset positions before tour setup)

1. Enter number “140”(110) and Key “PREVIEW” for beginning setup
2. Enter number “1”and key “PREVIEW”, the position “1” is added in the tour group as first tour position
3. Enter number “2”and key “PREVIEW”, the position “2” is added in the tour group as second tour position
4. Enter number “5”and key “PREVIEW”, the position “5” is added in the tour group as third tour position
5. Enter number “3”and key “PREVIEW”, the position “3” is added in the tour group as fourth tour position
6. Enter number “4”and key “PREVIEW”, the position “4” is added in the tour group as fifth tour position
7. Enter number “6”and key “PREVIEW”, the position “6” is added in the tour group as sixth tour position
8. Enter number “141”(111) and key “PREVIEW” to exit tour setup)
9. Enter 142(112) and key “PREVIEW” to start running the tour, the dome camera will runs in order of 1→2→5→3→4→6.

3-6 Setup and scan between two points

The speed dome camera has Left/Right scanning function. The user can set up the left and right limiting positions for the scanning area requested. When running the left/right scan, the unit will scan forwards and backwards between the left and right limiting positions consecutively.

3.6.1 Setup of Left/right Limiting Positions

The user can freely set one beginning position as Left Limiting Position and one terminal position as Right Limiting Position. (Remark: If the beginning position and the terminal position is the same position, the speed dome will scan for 360°). The Left/right limiting positions can be set up with keyboard controller.

1.1 Enter the number “160” (120) and press “PREVIEW” key to function the setup of left/right limiting positions

1.2 Control the dome camera by joystick, moves it to the right direction and reaches the desired point as a right limiting position, then enter 131(101), and press “PREVIEW” key, now the dome’s right limiting position has been set up successfully. Next, move camera to the left direction and reaches the desired point as a left limiting position, then enter 130(100) and press “PREVIEW” key again, now the left limiting position have been set up successfully..

1.3 enter 161(121) and press “PREVIEW” key to exit the setup. Now the setup of left/right limiting positions is completed.

3.6.2 Start scanning between two points

Enter 132(102) and press “PREVIEW” key

3-7 Start 360° scanning function of the Pan/Tilt

The Camera can be 360° endless horizontal scanning. The operation is as below:

a, enter 135 and key “preview for 360 degree endless cruising

b, enter 95 and key “preview for 355 degree back and forth cruising

3-8 Stop the auto scanning

While the camera is carrying out auto scanning, if you want to stop the auto scanning, you can enter 138 (108) and press “PREVIEW” key or press “zoom+” “zoom-“ key to stop

3-9 The Setup, Activating and Exiting of Default Position

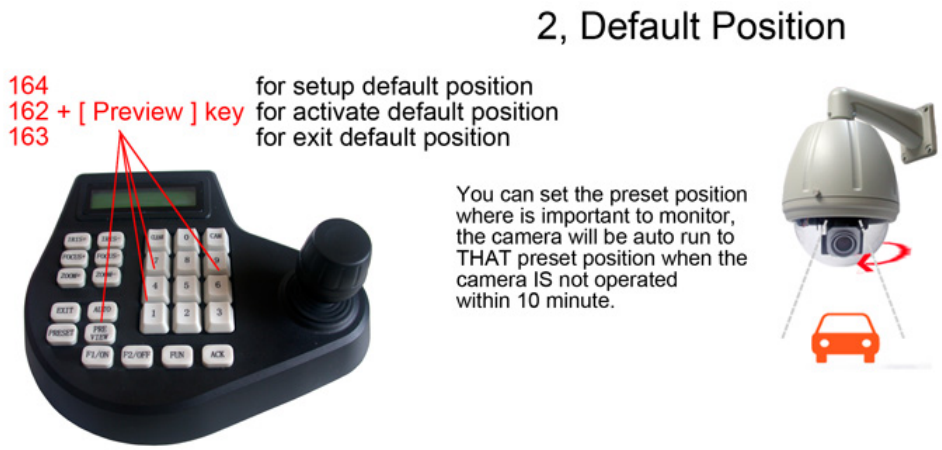
The unit has a default position. The user can set up default position for a key monitoring area according to actual requirement. If not operated after 5 minutes, the dome camera will automatically monitor the default position.

1. Setup of the Default Position

Move the dome camera to a key monitoring area by joystick, enter number “164” (124) on the keyboard and press the “PREVIEW” key, then the setup is successful.

2. Activate and Exit the Default Position function

The user can activate or exit the function of default position through the keyboard. Enter number “162” (122) and press the “PREVIEW” key, the function is activated. Enter number “163” (123) and press the “PREVIEW” key, the function is exited.

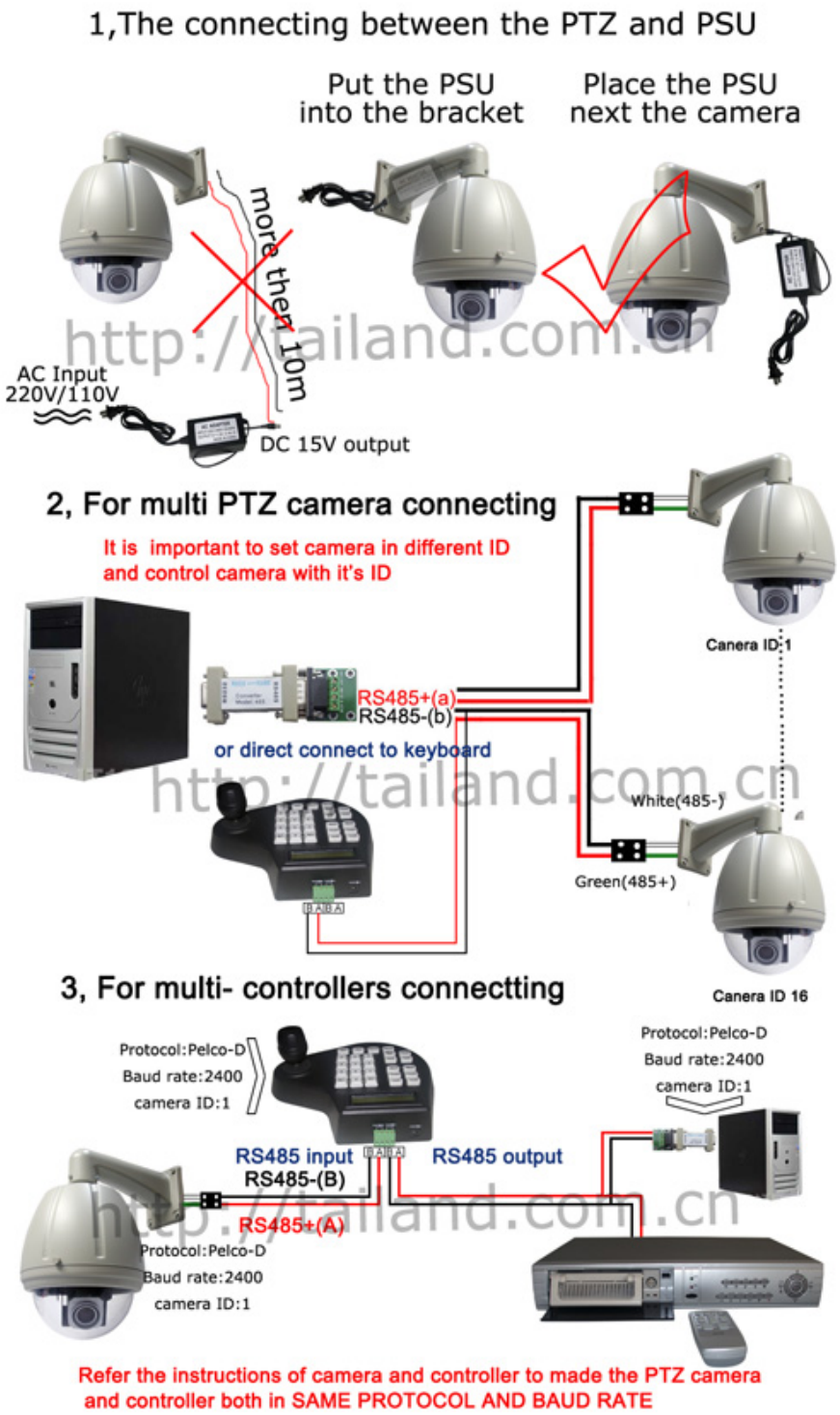

2, Default Position
164
162 + [Preview] key
163
for setup default position
for activate default position
for exit default position
You can set the preset position where is important to monitor, the camera will be auto run to THAT preset position when the camera IS not operated within 10 minute.

Part IV: Appendix

Simple troubles and corresponding solutions

Problems	Possible causes	Soluition
No action, no picture, indicator not on when power is switched on.	Wrong connection of power cables	Correct
	Power supply damaged	Replace
	Not required power type	Replace
	Bad power cable connection	Correct
Normal self-check and image but out of control	Address or Baud rate setup wrong	Set up again
	Protocol setup wrong	Set up again
	RS485 bus connection wrong	Check RS485 bus connection
Abnormal self-check image with motor noise	Mechanical failure	Repair
	Camera inclined	Reinstall
	Power supply not enough	Replace, placing the adaptor nearby the unit is recommended
Unstable image	Bad connection of video	Correct
	Power supply not enough	Replace
Some dome camera out of control or control delayed	Power supply not enough	Replace, placing the adaptor nearby the unit is recommended
	Matching resistor is not equipped in the dome camera at the farthest end	Install matching resistor in the dome camera
	Weak 485 signal; not enough power in 485 transformer	Replace with thicker controlling cable. Replace transformer

PART V. CONNECTING SKETCH


1,The connecting between the PTZ and PSU
Put the PSU into the bracket
Place the PSU next the camera
more then 10m
AC Input 220V/110V
DC 15V output
2, For multi PTZ camera connecting
It is important to set camera in different ID and control camera with it's ID
RS485+(a)
RS485-(b)
or direct connect to keyboard
Canera ID:1
White(485-)
Green(485+)
Canera ID 16
3, For multi- controllers connectting
Protocol:Pelco-D
Baud rate:2400
camera ID:1
RS485 input
RS485-(B)
RS485+(A)
RS485 output
Refer the instructions of camera and controller to made the PTZ camera and controller both in SAME PROTOCOL AND BAUD RATE

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